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COAL BEDS IN BUTLER COUNTY, PENNSYLVANIA

By

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Butler County's coal production has been increasing steadily for the last ten years. The county contains large areas of high volatile coals, just now coming into importance as the other high volatile coal fields of the State are rapidly being exhausted. Production has been delayed because the coals, as a rule, are high in ash and sulphur, and must be picked and washed to compete with the cleaner and thicker beds of other fields.

In 1918 Butler County stood thirteenth in Pennsylvania in quantity of bituminous coal mined. In that year, 1,397,927 tons were produced, valued at $4,111,060, and distributed as follows: 1,274,544 tons, valued at $3,761,968, were loaded at the mines for shipment; 94,317 tons, valued at $268,942 were sold to local trade and used by employees; 29,066 tons, valued at $80,150 were used at the mines for steam and heat. No coal was made into coke at the mines.

Butler County is in the western part of the State, north of Pittsburgh. It is bounded on the north by Mercer and Venango counties, on the east by Armstrong County, on the south by Allegheny County, and on the west by Beaver and Lawrence counties. Its area is 790 square miles; its greatest length is 34.5 miles, and its greatest width 24.5 miles. The population in 1920 was 77,270.

The Bessemer and Lake Erie Railroad crosses the county from southeast to northwest; and the Baltimore and Ohio Railroad from southwest to northeast, both through Butler. The Buffalo, Rochester and Pittsburgh Railroad runs east, and the Pennsylvania Railroad southeast, from Butler. The Western Allegheny Railroad crosses the county from east to west a few miles north of Butler.

P38.12

Butler County has a network of dirt highways and an intensive road building program is greatly increasing the mileage of improved roads. The highways are used for hauling coal to local consumers.

The topography is a dissected plateau. The highest hills are generally flat topped and range from 1200 feet above sea level in the southern part of the county to 1500 feet in the northern part. The valley bottoms are about 300 feet lower. As a rule the small streams flow in narrow valleys, but Connoquenessing Creek, the largest stream, meanders on its flood plain.

STRUCTURE.

The geologic structure of Butler County is in general a monocline, with the rocks rising gently northward. This general rise is modified by several small structures which cross the county from northeast to southwest.

Boggsville syncline, in the southeast corner of the county, is a minor structure, with a broad flat bottom and an indefinite axis. The slopes on both flanks are gentle.

Kellersburg anticline, in Winfield township, is an important structure, with gentle slopes on both flanks, and an axis rising regularly northeast.

Bradys Bend syncline is next on the northwest, in Clearfield and Jefferson townships. It is a broad shallow basin, with an ill-defined axis rising gently northeast.

The northern tip of Mount Nebo syncline enters the southwest corner of the county on the headwaters of Kauffman Run, and extends northeast near Myoma. It is a well defined structure with the dips on both flanks decreasing as the axis rises northeastward.

Brush Creek anticline enters the county just south of Hendersonville, and extends northeast near Callery. It is a broad flat fold, with its axis rising slowly to the north.

Sewickley syncline crosses the southern county line on Brush Creek; a mile north of that point the axis divides, one trough gradually curving northward to cross Brush Creek about half a mile east of Oakgrove Church. The other trough of this syncline has a northeast trend, and rises rapidly until it dies out against the side of Brush Creek anticline about a mile southwest of Callery.

Harrisville syncline in the northwestern corner of the county is a small fold having low dips on both flanks, and an almost level axis.

STRATIGRAPHY.

The outcropping rocks of Butler County are the Conemaugh, Allegheny and Pottsville formations of Carboniferous age.

The Conemaugh formation, composed of variegated shales, thin sandstones, limestones, and unimportant coal beds, has been eroded in the northern part of the county, and only a little over 100 feet remains in the southern part.

The Allegheny formation, composed of massive sandstones, clays limestones, shales, and important coal beds, underlies practically all the county, and has an extensive outcrop in the northern part. This formation is about 325 feet thick.

The Pottsville formation is composed chiefly of massive sandstones, shales, limestones, and impure coals. It has a limited outcrop in the largest stream valleys in the northern part of the county.

COAL BEDS.

There are ten coal beds of workable thickness in the county, and all except the Mahoning and Bakerstown coals are in the Allegheny formation. The following table shows their stratigraphic relations:

COAL BEDS IN BUTLER COUNTY

	Bed	Range in Interval	Range in thickness
	Bakerstown		0 - 3'0"
		125	
	Mahoning		6"- 2'6"
		40-55	
Allegheny Formation	Upper Freeport ("E")		1'- 9'6"
		50-65	
	Lower Freeport ("D")		0 - 3'0"
		40-80	
	Upper Kittanning ("C′")		0 - 4'6"
		40-55	
	Middle Kittanning ("C")		0 - 4'6"
		40-70	
	Lower Kittanning ("B")		0 - 3'6"
		40-60	
	Scrubgrass		1'- 1'6"
		20-30	
	Clarion ("A′")		0 - 7'0"
		20-35	
	Brookville ("A")		1'-4'6"

Brookville ("A") coal. This bed is mined extensively at Hilliards and Argentine in the northern part of the county. It is 3 feet 8 inches thick at Argentine, including a 1 inch bone parting 9 inches from the top. At Erico Station the bed varies from 3 feet 10 inches to 4 feet 4 inches thick, and has a 1 inch parting 9 inches from the top. At Goff Station the bed is 4 feet 6 inches

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thick, including the characteristic bone parting; at Hilliards, 3 feet 4 inches to 3 feet 8 inches thick, including one parting.

The Brookville coal is high in volatile matter, and very high in ash and sulphur. The bed always carries many lenses of pyrite. It is a bright coal, rather friable, and breaks up when mined. The coal requires washing and picking before it can compete with the high volatile coals in the Irwin basin.

Clarion ("A′") coal. This bed, lying 20 to 35 feet above the Brookville, is thin and unimportant in Butler County except at Bruin, where it ranges from 3 feet 10 inches to 7 feet thick. Here it is separated into two benches by a 10 inch shale parting near the middle of the bed.

Scrubgrass coal. This bed, lying 20 to 30 feet above the Clarion coal, is present in the northern part of the county, and averages about 9 inches thick, with a maximum thickness of 18 inches. This bed is probably a split from the Clarion bed.

Lower Kittanning ("B") coal. This bed is important only in a few eastern townships, where it is locally 3 feet 6 inches thick. The coal is clean and has excellent quality. In some places in the central and western townships it is 2 feet thick but has never been mined.

Middle Kittanning ("C") coal. This bed lies 40 to 70 feet above the Lower Kittanning coal and is very persistent and clean. On the west branch of Big Buffalo Creek in Clearfield township, it is locally 4 feet 6 inches thick, and is separated by an upper and lower shale parting 6 to 12 inches thick, into two 2-foot benches and a 6-inch bench. The bed is locally 4 feet thick in the southern townships and is good clean coal.

Upper Kittanning ("C′") coal. This bed is very persistent in the southern part of the county, averaging 2 feet thick, and having a maximum thickness of 4 feet 6 inches.

Lower Freeport ("D") coal. The Lower Freeport coal lies about 70 feet above the Upper Kittanning, and is present only in the southern part of the county. It is a persistent, thin bed, rarely of mineable thickness. It is 2 feet 6 inches to 3 feet thick at the mouth of Breakneck Creek in the western part of the county, and 2 feet 8 inches thick west of West Winfield. It is a good clean coal, free from partings.

Upper Freeport ("E") coal. This bed lies about 60 feet above the Lower Freeport coal. In the western part of the county its thickness is very irregular, with a maximum of 2 feet, and its average much less. It thickens up to 4 feet in the vicinity of Butler, and is workable in nearly all the eastern part of the county.

The Upper Freeport coal is 3 feet 8 inches thick at Chicora, not including 12 inches of bone coal at the top; at Karns City it is 3 feet 6 inches thick, not including 14 inches of bone coal at the top. The bed is mined extensively at Queen Junction, where it

is 4 feet 6 inches thick, with a shale parting 2 inches thick near the middle. At Karns City the coal is 3 feet 4 inches thick including 2 inches of bony coal at the top; at Brannan Station the bed is 3 feet thick, and has no distinct impurities. At Jamesonville the bed is 3 feet 6 inches thick, is very dirty, and has a 1 to 5 inch binder in the middle.

In the southeastern corner of Clinton township is an area of "Thick Freeport." The entire bed is 9 feet 6 inches, including 18 inches of shale in the middle. The lower bench is fine clean coal, but the upper bench is shaly and impure. The bed is mineable practically everywhere in the southeastern townships.

Brush Creek (Gallitzin) coal. This bed, lying at an average interval of 55 feet above the Upper Freeport, is a thin persistent bed in southern Butler County. It rarely exceeds 2 feet, and averages about 12 inches thick. It is generally a good clean coal, highly prized for smithing and domestic use. It has been entirely eroded in the northern part of the county.

Bakerstown coal. This bed, occurring about 125 feet above the Brush Creek coal, is thin and used only as a supply for house fuel. Its maximum thickness is 3 feet, and its average thickness is less than 12 inches.